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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,040	09/21/2005	Catherine Hedouin	1022702-000261	7039

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EXAMINER

LIAO, DIANA J

ART UNIT	PAPER NUMBER
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1793

NOTIFICATION DATE	DELIVERY MODE
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01/09/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/519,040	Applicant(s) HEDOUIN, CATHERINE	
	Examiner DIANA J. LIAO	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-34 is/are pending in the application.
- 4a) Of the above claim(s) 25-29 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-24, 30 and 32-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/22/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 17-24 and 30 in the reply filed on 9/22/2008 is acknowledged. The traversal is on the ground(s) that there is not a lack of unity. This is not found persuasive because as discussed, the product of claim 17 is not currently found to make a contribution over the prior art and thus there is a lack of unity amongst the process of making and process of using.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/22/2008 was filed after the mailing date of the first action on 5/23/2008. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 17-24, 30, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen, et al. (WO '152) and Wan '483, which was incorporated by reference.

WO '152 teaches an oxygen storage composition comprising a diluted oxygen storage component as part of a layered catalyst. (claim 1) The catalyst is for use as a three-way catalyst, stable at 900°C or more. (page 10, lines 30-33) The oxygen storage composition of the second layer of the catalyst taught in WO '152 is considered to be the claimed composition, as will be discussed. An example "second oxygen storage component", as described in WO '152 as part of a larger catalyst composition, is a co-precipitated ceria/zirconia composite which has preferably up to 30 weight % ceria, and at least 70 weight % zirconia. The oxygen storage composition also may comprise one or more of lanthana, neodymia, yttria, or mixtures thereof in addition to ceria. (page 12, lines 1-12) This fairly teaches, with sufficient specificity, the use of lanthana in combination with neodymia. The coprecipitated nature of the oxide is found to be equivalent to solid solution or the oxides being "in the zirconium oxide" as claimed. Wan '483 is incorporated by reference into WO '152. (page 21, lines 14-15) The example

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process to make the product of WO '152 makes no mention of any sulfur containing ingredient. (pages 34-35) WO '152 also teaches that a preferred oxygen storage composition contains 60-90% zirconia, 10-30% ceria, and when used, 0.1-10% a rare earth component selected from lanthana, neodymia, and yttria. (page 21, lines 16-21)

Wan '483 teaches that zirconium particles are stabilized by one or more rare earth oxides, such as cerium dioxide. (col 8, lines 39-43) Unstabilized zirconia will undergo phase transition at high temperatures, leading to a loss in surface area. However, the stabilized support can enter high temperatures without significant thermal degradation. (col 8, lines 50-57) Wan '483 discloses that a ceria-stabilized zirconia powder of 12% by weight ceria has a surface area of 55 m²/g. (col 12, lines 26-28)

WO '152 teaches the compositional limitations of the instant claims. Although a single oxygen storage composition is not disclosed containing only zirconium, cerium, lanthanum, and neodymium oxides, such a composition can be at once envisaged with the description of a composition which contains zirconia, ceria, and preferably one or more of lanthana, neodymia, yttria, or mixtures thereof in addition to ceria, as taught by WO '152. There are only six combinations of rare earths other than ceria, leading to the combination of the instant claims to be fairly taught. Regardless of the composition of the oxygen storage component, the total example composition taught in WO '152 does comprise of zirconium and cerium oxide, with a ratio of Zr/Ce >1 and lanthanum and neodymium oxide to satisfy instant claim 17.

WO '152 is silent to the sulfur content of its composition, and suggests overlapping ranges for but does not specifically teach, the claimed ranges of oxides. WO '152 also does not specifically disclose the ranges for the surface area of the compositions after several varying calcination conditions.

Regarding the sulfur content, since WO '152 does not teach or state anything to suggest that there is sulfur in its oxygen storage composition, nor does it teach that any of the reactants in the process is a sulfur-containing compound. Thus it is inherent that the resulting composition would not contain sulfur. Sulfur would be an impurity, and it would be obvious to one of ordinary skill in the art to achieve as pure a product as possible.

Regarding the oxide composition, WO '152 teaches ranges which meet the limitations for zirconium and cerium oxides but does not teach specific weight percentages for lanthanum or neodymium oxides. However, the guidance of the weight percentages in general, one finds that no more than 30% of the oxide composition by weight should be made up of non-ceria rare earth metal oxides. The further teachings of WO '152 state that preferably the rare earth component selected from lanthana, neodymia, and yttria should not exceed 10%. This would suggest that the total amount of rare earth oxides should not exceed 10% since La, Nd, and Y are stated to be equivalents of one another. However the range is considered, the amount of lanthanum oxide and neodymium oxide taught in WO '152 overlaps with that of the claimed ranges and thus there is a *prima facie* case of obviousness.

The limitations regarding the surface area after calcination at a certain temperature for 6 hours are not found to be patentable as part of these composition claims. The properties recited in the instant claims require that the composition is used and undergoes a process and then has the surface area properties. It appears that the claimed composition and that taught in the prior art are substantially identical and thus these other properties must be inherent. The teachings of Wan '483 suggest that the zirconia is stabilized and thus should be able to retain high surface area, even at high temperatures. Alternatively, it would be obvious to create a stable compound at high temperature of the composition taught in WO '152 because it is used at high temperatures, such as those of 900°C or more. (page 10, lines 30-31) It would be obvious to one of ordinary skill in the art to create a material, well stabilized by rare earth oxides as taught in Wan '483, which does not undergo phase transition at a temperature anywhere close to that of operating temperature. Since the starting surface areas of the zirconia composite taught in Wan '483 are equal to or above the surface areas as recited in the instant claims, it would have been obvious that a properly stabilized composition would have the same surface area after any calcinations. A higher surface area would be desired in order further disperse catalyst onto the composition, as rhodium is dispersed in Wan '483 (col 8, lines 38-39). In addition, it would be desirable for the composition to be thermally stable, and the retention of surface area is a correlating result. Therefore, the claimed surface areas after calcination is not found patentable over the prior art.

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Due to overlapping ranges and other suggested teachings about surface area, claims 17-24, 30, 32 and 34 are not found patentable over the prior art.

4. Claims 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO '152 and Wan '483 as applied to claims 17 and 32 above, and further in view of Anatoly, et al. (US 6,387,338).

WO '152 and Wan '483 do not discuss the crystal structure of the zirconium oxide.

Anatoly '338 teaches oxide compositions suitable for oxygen storage components (col 2, lines 46-51), such as the oxide taught in WO '152. Zr-rich structures are usually tetragonal instead of the desirable cubic structure. (col 2, lines 62-66) This is achieved through stabilization agents and finding a suitable amount of cerium. (col 4, lines 40-57)

One would have been motivated to optimize the composition the using the teachings of Anatoly '338 because it teaches that the cubic structure is advantageous in oxygen storage applications in three-way catalysts and also guidance as to how to achieve it. Therefore, it would have been obvious to create a cubic structure and claim 33 is not found patentable over the prior art.

Response to Arguments

5. Applicant's arguments filed 9/22/2008 have been fully considered but they are not persuasive.

Applicant argues that the composition of Wan '483 contains fewer oxides than the claimed composition, and that the surface area of the composition stated has no relevance to the surface area at higher temperatures. However, Wan '483 was used as incorporated by reference into WO '152, which does teach the use of other oxides. The argument stating that the surface area of Wan '483 has no relevance to the high temperature surface area is mere allegation, and applicant has failed to show convincing evidence that the oxide of the prior art does not have the same properties as the claimed composition, despite having substantially similar composition.

Applicant argues that the claimed composition possesses stability at high temperatures, possibly through the process of making. The statements made by applicant stating that the compositions of the prior art, which are substantially similar in composition, are in the form of a mere argument, and do not hold weight. The differences in the process of making are furthermore not present in the product claims.

Applicant argues that although there is motive to achieve high surface area that there is no guidance as to how. However, stabilizing agents are well known in the art. Although the surface area after the claimed calcination temperatures perhaps have previously never been measured, there still exists a reasonable doubt that such a composition is suggested in the prior art.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIANA J. LIAO whose telephone number is (571)270-3592. The examiner can normally be reached on Monday - Friday 8:00am to 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngoc-Yen M. Nguyen/
Primary Examiner, Art Unit 1793

DJL